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First shared SARS-CoV-2 genome: GISAID vs virological.org



The Global Initiative on Sharing All Influenza Data (GISAID) has been a vital resource during the COVID-19 pandemic. About 15 million SARS-CoV-2 sequences have been uploaded to the GISAID database, enabling researchers to monitor the emergence and spread of variants such as alpha, delta, and omicron, as well as undertake studies aimed at developing vaccines and therapeutics. None of which is under dispute. But GISAID's contention that it was the first to publicly share the SARS-CoV-2 genome has sparked controversy.

GISAID did not respond to interview requests from *The Lancet Microbe*. However, a statement on the GISAID website dated March 23, 2023, asserts that the Chinese Centre for Disease Control and Prevention (CDC) "made the first whole-genome sequences available to the world via GISAID shortly after midnight on 10 January 2020 UTC [Coordinated Universal Time, equivalent to Greenwich Mean Time]".

An entry from the same website earlier in the year states that when the data from the SARS-CoV-2 genome were shared via GISAID on Jan 10, 2020, "it kicked off a global surveillance effort of what would become a pandemic of historic proportions". In comments to *Science* published on March 23, 2023, GISAID's vice-president Ben Branda specified that two of three SARS-CoV-2 genomes that GISAID had received from the Chinese CDC were published at 00:41 and 00:44 (all times in UTC/GMT) on Jan 10, 2020, and the third followed at 01:01 on Jan 11, 2020.

If this was the case, GISAID publicised the SARS-CoV-2 genome a full day before the online forum virological.org posted the genome sequenced by Zhang Yong-Zhen, a virologist at Fudan University (Shanghai, China).

The virological.org post went online at 01:05 on Jan 11, 2020, submitted by Edward Holmes, a virologist at the University of Sydney (Sydney, NSW, Australia), who had received the genome from Zhang a few hours previously. Holmes' post is still available on the website.

Zhang was not the first to sequence SARS-CoV-2. But he has been widely acknowledged as the first to make the genome publicly available. *Time* named him as one of the 100 most influential figures of 2020. "I am very surprised at the GISAID claim", Zhang told *The Lancet Microbe*. He accused GISAID of attempting to rewrite history and added that "in China, everyone knows the date (12 Jan, 2020) on which people from Chinese CDC, Chinese Academy of Medicine and Chinese Academy of Sciences (Wuhan Institute of Virology) submitted their SARS-CoV-2 genomes to GISAID".

To corroborate its version of events, GISAID has referenced several peer-reviewed publications, including the *New England Journal of Medicine* (NEJM) paper that reported the results of the BNT162b2 (Pfizer-BioNTech) SARS-CoV-2 vaccine trial. The authors of the NEJM paper wrote that "the development of BNT162b2 was initiated on January 10, 2020, when the SARS-CoV-2 genetic sequence was released by the Chinese Center for Disease Control and Prevention and disseminated globally by GISAID".

Nonetheless, on Jan 11, 2020, WHO tweeted that "whole genome sequences for the novel #coronavirus (2019-nCoV) from the Chinese authorities were shared with WHO and have also been submitted by Chinese authorities to the GISAID platform so that they can be accessed by public health authorities, laboratories and researchers". The wording of the

tweet implies that GISAID had not yet published anything. Holmes told *The Lancet Microbe* that he looked on the GISAID website soon after reading this tweet and there was no sign of the SARS-CoV-2 genome.

"I am completely certain the genome first appeared on virological.org", said Marion Koopmans, head of the Department of Viroscience at Erasmus University Medical Centre (Rotterdam, Netherlands). "We were all looking out for it, and as soon as it went up we took down the information and started investigating the virus". *The Lancet Microbe* was unable to find contemporary evidence to verify GISAID's claims. There is no mention of a GISAID release of the SARS-CoV-2 genome among the entries on FluTrackers.com for Jan 10, 2020, though the virological.org genome is flagged soon after its publication. The only tweet to include the words "GISAID" and "genome" on Jan 9–12, 2020, is the one quoted above from WHO.

"If GISAID really did publish before anyone else, why did absolutely no-one see it? It makes no sense", said Holmes. He pointed out that Zhang has faced repercussions from the Chinese authorities for sharing the SARS-CoV-2 genome. "Why would they bother to go after him if the genome from the Chinese CDC had already been published?", asked Holmes. Koopmans worries about the prospect of a feud. "I am a big supporter of GISAID; what they do is really important. If they get involved in a prolonged row over who got there first with this genome, it could damage their reputation and set back data sharing efforts. We need to avoid that", she said.

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For GISAID see <https://gisaid.org/>
For Ben Branda's comments to *Science* see <https://www.sciencemag.org/content/article/dispute-simmers-over-who-first-shared-sars-cov-2-s-genome>
For virological.org see <https://virological.org>
For Holmes' post on virological.org see <https://virological.org/t/novel-2019-coronavirus-genome/319>
For the NEJM paper see *N Engl J Med* 2020; **383**: 2603–15